

AN ADDRESS
ON
A Series of Cases of Appendicitis
Associated with General Peritonitis

TOGETHER WITH
OTHER CASES OF APPENDICITIS OPERATED ON
WITHIN THE YEAR

DELIVERED BEFORE THE MEDICAL SOCIETY OF LONDON,
DECEMBER 14, 1896

BY

MAYO ROBSON, F.R.C.S.

*Senior Surgeon to the General Infirmary at Leeds ; Professor of Surgery in
the Yorkshire College ; Member of Council and Hunterian Professor of
the Royal College of Surgeons of England*

[Reprinted from "The British Medical Journal," December 19, 1896]

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MR. PRESIDENT,—The various pathological classifications of appendicitis are of greater scientific than of clinical importance when the question of operation has to be considered, and I think it will be found that the division of cases into acute and subacute will serve a more useful purpose, than to speak of catarrhal, ulcerative, and infective, or of endo-, parietal-, peri- and para-appendicitis. The most important points to settle in any given case of appendicitis are: (1) Ought an operation to be done? (2) If so, when?

It may sound somewhat radical, but I speak from conviction after considerable experience, when I say that I believe the early operation, undertaken as soon as appendicitis is diagnosed, first advocated by Dr. McBurney, would

lead to a far greater percentage of recoveries than the method of individualising which we in England still adopt, and which we seem likely to continue.

I believe this because I know that the removal of an appendix before suppuration, perforation, or gangrene has occurred, or before firm adhesions have formed, is practically unattended by risk, as shown by the experience of Mr. Treves, of myself, and of many other surgeons, and the operation can be accomplished through a small incision with separation rather than division of muscular fibres, whereas in waiting for resolution we not infrequently land ourselves in serious difficulties, and have to operate under unfavourable circumstances such as are described in some of the following cases.

The following cases have occurred in my practice during the past year, and as they illustrate the points I wish to emphasise I prefer limiting my remarks to them, especially as they are all fresh in my memory. In order to save time I hand round a tabulated statement which will enable me to refer only to special cases.

Whilst it is convenient to make the clinical division before operation, it is quite easy to divide the cases subsequently into : (*a*) Catarrhal, as instanced by Cases 5, 7, 8, 11, and 18, which are good examples of recurrent appendicitis ; and (*b*) suppurative, either without perforation as, in Cases 2, 9, 10, 12, 16, and 20, or with perforation, as in Cases 1, 3, 4, 13, 14, 15, 17, and 19, or associated with gangrene without perforation, as in Case 6.

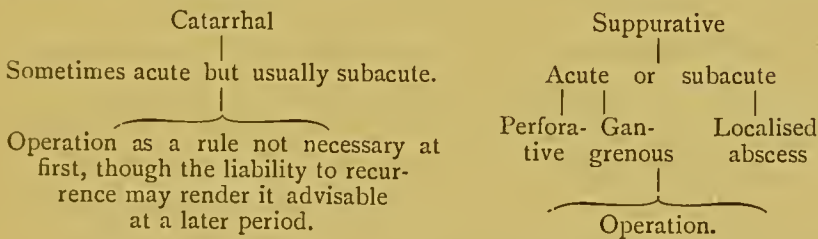
Catarrhal appendicitis furnishes the greater number of cases of recurrent appendicitis, and this is the variety which may, and usually does, recover without surgical treatment, though, as shown by Case 17, while the first and second attacks may be catarrhal and end in resolution, the next seizure may assume the suppurative form and produce general peritonitis, demanding operative interference, and by Case 20, where the first attack was catarrhal and the subsequent attack suppurative requiring operation.

Suppurative appendicitis may run an acute or a subacute

course, but whatever form it assumes, whether with or without perforation, or with or without gangrene, it demands operation, which in my opinion should be advised at the earliest possible moment, that is as soon as a probable diagnosis is arrived at.

I have never regretted operating, but I know of several calamitous cases where delay at the request of the patient or his family has led to a fatal termination which might probably have been avoided had operation been more strongly urged.

This simple classification into catarrhal and suppurative, which is closely related to the clinical division of acute and subacute, is the first step to enable us to arrive at a decision with regard to operation. It is simply shown in the appended chart :



I always look on an acute onset, with a rapid pulse and tenderness over the appendix without the presence of a tumour, as indicating the need for immediate operation. A more gradual commencement with a quiet pulse (not over 100) and the early formation of a tumour, are signs that delay may be safe.

If in the course of an appendicitis at any stage a rigor with rise of pulse and temperature occur, operation should be advised, as it indicates septic absorption. The temperature alone is very little assistance, the pulse being the true guide for treatment. Opium may so disguise the pulse-rate, thus leading to serious or even fatal delay, that I feel sure we best consider the welfare of the patient by trying to give relief in other ways, until the condition to be dealt with has manifested itself. If opium has been given it will be advisable for the surgeon to reserve his opinion, and if on withholding the sedative for a few hours

the pulse has increased in frequency, and anxiety of countenance has declared itself, operation will be required. Relief or cessation of pain with a marked rise in pulse-rate is an indication for immediate operation, as it not infrequently indicates gangrene of the appendix. Distension of the abdomen with vomiting and rapid pulse are signs that admit of no delay, as they are indicative of extending or of general peritonitis.

In formulating rules like those I have just mentioned I feel that I owe an apology to my audience for entering into so much detail; but if we uphold the principles of individualising, we must try to formulate some rules to guide us as to when we may use and when withhold the knife.

As to the time when operation should be done. In the subacute or catarrhal forms the quiescent period, as advised by Mr. Treves, is undoubtedly the safest, and any time after the more acute symptoms have subsided may be selected. Probably from two to four weeks after recovery from an attack will be found the best.

Dr. Willie Meyer, in the *Medical Record* of February 29, 1896, remarks that "an appendix, once inflamed, has to be looked upon as a diseased organ, which is very apt to give repeated and more serious, even fatal, trouble in the future." He therefore advocates the removal of the appendix in every case after a first attack, and I think this may be sound advice, though in England our practice is less radical.

I suppose we can all point to cases where a patient has had an attack of catarrhal appendicitis ending in complete recovery without recurrence, therefore those who advocate delay have reason on their side; but I do most strongly uphold that after a second attack operation should be decidedly urged, as repeated seizures will certainly recur, and from being catarrhal may become suppurative.

In operating, ought we always to remove the diseased appendix? It will be noticed that in all the cases on which I have operated during the year, I removed the

diseased organ, with the exception of Cases 2, 9, 16, and 20. In Case 2 the patient was too ill to bear the search; in Case 9 the appendix was not found when the pus was evacuated, and a second attack occurred within a few weeks, when I again operated; but on this occasion, on the day of the seizure, before an abscess had formed, I was thus able to search for and find the offending organ, which contained muco-pus. In Cases 16 and 20 the appendix could not be discovered without greater separation of adhesions than I thought to be prudent. My own feeling is that, with few exceptions, the operation should be made complete by removing the origin of the trouble.

No question can be raised as to the wisdom of removing it in the recurrent form, as that is the *raison d'être* of the operation; nor can there be much doubt that where there is general peritonitis the perforated or gangrenous appendix should be taken away; the only question arises in cases where suppuration is apparently localised, and where there is a fear of opening the general peritoneal cavity in searching for the offending member.

My method of procedure in such cases is to evacuate very thoroughly and cleanse the abscess cavity as soon as pus is reached, and then to carefully follow the longitudinal band on the cæcum, if that can be seen, as it inevitably leads to the appendix. This can usually be removed without greatly disturbing adhesions; but, even if adhesions be broken down and the general peritoneal cavity be exposed, no harm will as a rule follow if the parts be isolated by sponges.

If the cæcum is covered by inflamed omentum or adherent intestine, so that the longitudinal band cannot be seen, the finger in the abscess cavity will frequently recognise the hard, rounded appendix, which can then be detached without much disturbance of adhesions, or, as not infrequently happens, the perforated or gangrenous appendix may be found projecting into the abscess cavity, when it can be easily removed. If, as rarely happens, none of these conditions be found, I would on no account

advise a prolonged search, as such would undoubtedly increase the risk of the operation. Besides the manifest advantage of removing the danger of subsequent attacks, the removal of the appendix (*secundum artem*) takes away the danger of fæcal fistula; and not infrequently the judicious search for the damaged organ leads to the discovery of other collections of pus, to leave which would be highly dangerous and very unsatisfactory.

In operating where there is general infective peritonitis we must be prepared to lose many patients, even if the operation be undertaken in a fairly early stage; but in the later stages, when distension is well marked, and the pulse is becoming very rapid, the percentage saved will be very small. I have been fortunate in saving 5 out of 6 cases of this kind on which I have operated during the year, and I feel that it is a much larger percentage of recoveries than one might reasonably expect. As although there ought to be no mortality in operations undertaken in the quiescent period, and a very slight one in acute suppurative cases, where the area of suppuration is limited, we can scarcely venture to predict that we shall always be able to save 82 per cent. of the cases of appendicitis if accompanied by general suppurative peritonitis. In such cases I believe in very free irrigation with plain boiled water, or with weak boracic lotion, and in very free drainage by several large rubber tubes.

The incision I usually employ is one of 2 to 3 inches, slightly curved, and a little to the inner side of the anterior superior spine of the ilium, higher or lower according to the position of the tender spot known as McBurney's point, which is nearly always a true guide to the root of the appendix. When I can, I adopt McBurney's method of separating muscular fibres instead of dividing them; this can always be done so far as the external oblique is concerned, and often in the case of the internal oblique.

In removing the appendix when I can I ligature the mesentery with catgut, and then make a circular incision

through the peritoneal coat, folding this back like a cuff. I then ligature with catgut the muco-muscular portion and amputate it. After purifying the stump iodoform is applied, and the peritoneal cuff turned back and ligatured over it. If the appendix be removed close to the cæcum as in case 16, I ligature the stump if possible and invaginate it into the cæcum, applying Lembert's sutures over all.

If, as in Case 19, the appendix is too much disorganised to bring to the surface and it is undesirable to disturb adhesions, I simply apply a catgut ligature around the whole organ and cut off the part beyond the ligature. In only one of the cases (19) was there any subsequent fæcal discharge (and that only for a short time) from the wound, showing that these methods were efficient. In closing the abdomen I suture peritoneum to peritoneum and muscle to muscle by catgut, using silkworm gut for the superficial structures. Union usually occurs by first intention, except where the drainage tube was, and there is very seldom any yielding of the scar or development of hernia.

With regard to the use of drainage tubes, I seldom drain when I operate on the catarrhal form, but in the acute form, when there is a septic cavity, I usually drain freely after purifying the cavity by sponging and applying iodoform to the septic lining of the abscess. Of the twenty operations it will be seen by the table that nineteen recovered, and the one that succumbed was so poisoned at the time of operation that his recovery was practically impossible, though I thought it my duty to give him what chance of life was possible by doing a laparotomy and washing out his abdomen.

In ten out of the twenty cases fæcal concretions were found, and in one case a small gall stone was discovered in the appendix. In no fewer than nine of these cases there were associated perforation and gangrene. In Cases 8 and 11 there were concretions present, though the form of appendicitis was catarrhal and recurrent; and these would doubtless, if left long enough, have ended in perforation. In spite of what a distinguished authority has said on the

subject of concretions, in these cases I cannot help feeling that the concretions and perforation bear the relation in many cases of cause and effect. As the cases were of all degrees of intensity, and as they constitute my whole operative experience of the subject for the past year, and are given *seriatim* without any selection, I trust they may form a basis for a useful discussion.

CASE II.—*Appendicitis ; Accouchement ; General Peritonitis ; Operation ; Recovery.*—On January 3, 1896, I received a telegram from Dr. Martin, asking me to go to Huddersfield to see a case of acute general peritonitis. On arrival I found the patient, Mrs. —, aged 32, looking extremely ill, with an enormously distended abdomen from general peritonitis and a pulse of 160. She had been confined thirty-six hours previously, labour having been brought on a month prematurely by a sudden severe pain starting over the cæcum. This cæcal pain had continued from thirty-six to forty-eight hours before labour set in, and from the time the pain began up to my seeing her, her condition had so rapidly deteriorated that we all feared her case was hopeless. Dr. Rolfe gave the anæsthetic, and with the assistance of Dr. Donald and Dr. Martin, I opened the abdomen in the middle line below the umbilicus, letting out a large quantity—probably two pints—of very offensive pus. The primary abscess sac could be felt in the cæcal region, but as the patient was so extremely ill no search was made for the appendix. The abdomen was thoroughly washed out with a hot solution of boracic acid and free drainage adopted, a glass tube being placed in Douglas's pouch and a rubber tube in the cæcal region. Recovery was gradual but ultimately complete, and the patient is now well.

CASE III.—*Appendicitis ; General Peritonitis ; Operation Third Day ; Recovery.*—On January 6, 1896, I was urgently summoned by Dr. Hobson, of Harrogate, to see a case of peritonitis in a child, aged 10, which had started three days before very suddenly with a violent pain over the appendix. The patient looked collapsed, had an

extremely rapid pulse, dry tongue, pinched countenance, and somewhat distended abdomen. The case looked hopeless, but operation was advised as giving the only chance. The abdomen was opened over the appendix as, though no induration could be felt, a thrill as of free fluid could be elicited. Thin offensive pus was at once reached on opening the peritoneum, but there was an almost entire absence of barrier lymph, and not only the right loin, but the pelvic cavity was full of pus, which was also flowing over into the rest of the abdominal cavity. These cavities were well cleansed with wool pads. The perforated and gangrenous appendix was easily found and removed close to the cæcum, a large fæcal concretion, about the size of an almond, being found in the loin outside the appendix. The abdomen was washed out with hot boracic lotion and a drainage tube was left in the pelvis, one in the right loin, and one was passed towards the spine. Progress to recovery was gradual but sure, and the patient is now quite well.

CASE IV.—*Appendicitis ; General Peritonitis ; Operation Fourth Day ; Recovery.*—On February 7, 1896, I saw a boy, M. P., aged 15 years, at Cleckheaton, with Dr. Sykes, on the fourth day of the disease. The onset had been sudden, and the history of appendicitis was well marked the tender spot being present. There was an entire absence of induration over the cæcum, and but for a distinctly perceptible thrill over the right loin and over the lower abdomen, I might have been deceived, as, though the face betokened distress, the pulse was only 100, and there was no marked distension. On opening the abdomen over the cæcum the pelvis and right loin were found full of pus, which was ichorous and very offensive. There was no attempt at limitation, and the peritonitis was general. The appendix was gangrenous and perforated, and a fæcal calculus was found outside the appendix. The appendix was removed. Very free drainage of the abdomen was necessary, and three drainage tubes were inserted, one in the pelvis, one in the right loin, and one right across

the abdomen. Recovery was complete and uninterrupted, and the patient is now well.

CASE XIV.—*Appendicitis ; General Peritonitis ; Operation Third Day ; Death.*—On July 28, 1896, I saw with Mr. F. H. Mayo, a youth, Mr. W., aged 21, on the third day of the disease, which had been sudden in onset. He was much collapsed, and had a pulse of 140. There was violent sickness, and the abdomen, which was unusually tender, was much distended and very tense. No tumour could be felt, but the pain had started in the cæcum. Abdominal section was performed in a small room by candle light. The appendix was gangrenous and perforated. A calculus the size of a large pea was found outside the appendix, and on examination, chemically and otherwise, it was found to be a gall stone, though there had been no previous history of his passing one. Pus was found all over the abdomen in large quantity, and it was not limited in the slightest degree. During the operation the patient was very much collapsed, and, in fact, we feared he might die on the table, his pulse being barely perceptible, intermittent, and quite 150. The cavity washed out as well as was possible under the circumstances, and then drained freely. The patient never rallied, and died from the combined effect of septic poisoning and shock within twelve hours.

CASE XV.—*Appendicitis ; General Peritonitis ; Operation Third Day ; Recovery.*—On August 9, 1896, Miss B., aged 14, was seen with Dr. Smith, of Stanningly, on the third day of the attack, with pulse 120, much collapsed, abdomen greatly distended, fluctuation in right flank and loin, sickness and vomiting. Abdominal section was performed. The appendix was gangrenous and perforated. A fæcal concretion was present, and there was extensive suppuration, with general peritonitis ; five ounces of offensive pus were found in the loin. There were no adhesions limiting the pus. The appendix was removed, and drainage was effected by two tubes, one passing through from the abdomen into a counter-opening in the line. Recovery was complete and rapid, without complications or discomfort.

CASE XVI.—*Appendicitis ; General Peritonitis ; Operation Second Day ; Recovery.*—M. D., aged 19, was seen with Dr. Scarth, of Leeds, on August 30, 1896. The history showed that the present attack was quite sudden, but he had had two slight attacks of catarrhal appendicitis within the year. When seen by me thirty-six hours after the onset of the attack he was under the effect of opium, and the symptoms were marked, the pulse being only 100, but the absence of tumour, the sudden onset, the hard, tense abdomen, and the marked tenderness over McBurney's point made me suspect perforation with extension of peritonitis. I therefore proposed that the morphine should be stopped, and that I should see him in twelve hours again, when the rapid pulse (120), the increased distension, the fluid thrill in the loin and over the cæcum, with the increased tenderness, the absence of tumour, and the persistent vomiting, made me decide on immediate operation. The abdomen was opened by an incision three inches long over the cæcum. Suppurative peritonitis was found, with entire absence of adhesive peritonitis around original seat of disease ; thirty to forty ounces of thin, very offensive pus was evacuated from the iliac fossa and the cavity of the pelvis, the small intestines being bathed with offensive matter. The appendix, very large and gangrenous, was found perforated close to the cæcum, the opening being large enough to admit the tip of the little finger. It was removed where it joined the cæcum, and the stump was invaginated and closed by Lembert's sutures. After the pus had been wiped away the abdomen was freely washed out with hot boracic lotion. Two large drainage tubes were inserted, one to the bottom of the pelvis, and the other into the right kidney pouch. From the evening of operation the pulse and temperature became and remained normal, and recovery was satisfactory in every respect.

MR. MAYO ROBSON'S SERIES OF CASES OF APPENDICITIS OPERATED ON DURING THE PAST YEAR.

No.	Date.	Initials or Sex.	Age.	Description — Acute or Subacute.	Peritonitis, General or Local.	History.	Operation.	Result.	With whom seen.
1	1895 Oct. 5 ...	Mr. R. ...	19	Acute ...	Localised	Acute symptoms 3 days, rigor; pulse 120, distension	Appendix gangrenous and perforated: fecal concretion; appendix ligatured and removed. Drainage	R.	Dr. Keighley (Batley).
2	1896 Jan. 3 ...	Mrs. T. ...	27	"	General...	Acute symptoms followed by premature labour. Operation 36 hours after confinement; rigors; pulse 160; great distension	Appendix not searched for; several pints of pus evacuated. Free drainage by one glass tube in Douglas's pouch and one soft rubber across the abdomen to the caecal region. Lavage of abdomen	"	Dr. Martin (Huddersfield).
3	Jan. 6 ...	Miss W.	12	"	"	Acute symptoms 3 days, rigor; patient almost <i>in extremis</i> , pulse 150	Appendix gangrenous and perforated; fecal concretion; pelvis full of pus. Appendix removed; drainage	"	Dr. Hobson (Harrogate).
4	Feb. 7 ...	M. P. ...	15	"	"	Duration 4 days, no rigor; pulse 100.	Appendix found gangrenous and perforated; concretion outside; appendix removed. Abdomen and pelvis containing several pints of offensive pus. Lavage and free drainage, namely, one tube in Douglas's pouch, one across abdomen, one in the right loin	"	Dr. Sykes (Cleckheaton).
5	Feb. 18...	S. T. (M.)	46	Subacute	Localised	Two years previously had abscess of appendix. Recurrence 11 days' duration, with subacute symptoms; suppuration	Appendix inflamed, 3½ inches long; removed. Pus evacuated. Drainage	"	Infirmary.
6	March 24	A. H. ...	9	Acute ...	"	Acute symptoms 2 days, rigors and temperature	Appendix becoming gangrenous, much enlarged; removed; fecal concretion present: pus evacuated and drainage	"	"

7	April 8 ...	Mr. B. ...	32	Subacute	"	Subacute, but symptoms well marked; 14 previous attacks	Appendix strictured near base, containing pus; removed; no drainage	"	Dr. Macaulay (Halifax).
8	April 22	M. R. ...	23	"	"	History of three previous attacks of appendicitis	Appendix in matted omentum, containing concretion and surrounded by an abscess. Appendix removed, together with adherent omentum	"	Infirmary.
9	June 3 ...	J. D. ...	35	Acute ...	"	Attack 8 days' duration ...	First operation, no appendix or concretion found, quantity of pus evacuated and cavity drained	"	"
10	August 3	J. D. ...	35	"	"	Some weeks after the first operation second severe attack, preceded by rigors	Second operation, appendix found adherent to iliac vessels; removed, pus evacuated. Drainage.	"	"
11	June 15...	H. F. ...	17	Subacute	"	History of 4 attacks with subacute symptoms	Appendix adherent and strictured near middle; concretion beyond stricture. Muco-pus; removed; no drainage	"	"
12	June 17...	S. C. ...	41	Acute ...	"	Acute symptoms 14 days; localised abscess	Appendix found thickened and adherent to caecum. Removed; pus evacuated; drainage	"	"
13	July 24 ...	Mr. D. ...	36	"	"	Acute symptoms 6 days, rigors; pulse 108	Appendix gangrenous and perforated; concretion found; about 2 pints of offensive pus evacuated; drainage.	"	Dr. Johnston (Ilkley).
14	July 28 ...	Mr. W. ...	21	"	General...	Very acute symptoms for 3 days. Patient collapsed and cold before operation, pulse 140	Appendix removed; drainage	D.	Dr. Mayo (Leeds).
15	August 9	Miss B. ...	14	"	"	Acute symptoms 3 days; patient <i>in extremis</i> , with pulse 130	concretion a gall stone. Abdomen practically filled with pus (several pints); free drainage	R.	Dr. Smith (Stanningley).
16	August 29	Mrs. C. ...	—	"	Localised	Acute symptoms 4 days, rigors (recurrent attacks)	Appendix gangrenous and perforated, containing concretion; appendix removed; pus all over abdomen and in right loin. Free drainage by several rubber tubes; one through counter opening in loin. Appendix removed	"	Dr. Lee (Dewsbury).
							Appendix not found; 5 to 6 ounces offensive pus evacuated. Free drainage		

MR. MAYO ROBSON'S SERIES OF CASES OF APPENDICITIS.—*continued.*

No.	Date.	Initials or Sex.	Age.	Description —Acute or Subacute.	Peritonitis, General or Local.	History.	Operation.	Result.	With whom seen.
17	1895. August 30	Mr. D. ...	19	Acute ...	General...	Acute symptoms 2 days, with rigors; pulse 120, abdomen distended; no tumour	Appendix gangrenous and perforated at its base; removed; pus evacuated from pelvis and abdomen; free drain- age by two tubes after thorough lavage of abdomen	"	Dr. Scarth (Leeds).
18	Sept. 24...	E. B. (F.)	31	Subacute	Localised	Three attacks within 9 months, with one 6 years previously	Appendix elongated, constricted at its base, and in its cavity pus found. Ap- pendix removed and wound cleansed. No drainage	"	Infirmary.
19	Oct. 24 ...	Mrs. C....	33	Acute ...	"	Acute symptoms 4 days; pulse 130, temperature 103°; rigors	Appendix gangrenous and perforated; iliac fossa containing about 10 ounces of offensive pus	"	Dr. Hobson Dr. Edgecombe (Harrogate).
20	Dec. 4 ...	Mr. H....	24	Subacute	"	Fourteen days; tempera- ture 103° at time of ope- ration	Abscess opened and drained; appendix not felt; third attack	"	Dr. Ozanne (Harrogate).